

# ***Hepática nóbilis* SCHREBER** (other information: MILLER – but this is the author of the generic name!)

bzw. ***Hepática nóbilis* SCHREBER var. *nóbilis* GARSALT (?)**

Place and date of valid description or designation of the species:

Hepática nóbilis SCHREBER in: „Spicilegium florae Lipsicae“: 39. 1771 (Johann Christian Daniel von SCHREBER, 1739-1810, deutscher Botaniker, Schüler Linnés)

Hepática nóbilis GARSALT in: Fig. Pl. Anim. Med. t. 301 (1764); Descr. Pl. Anim. 189 (1767); Thell. In Bull. Herb. s. Ser. II. 8: 791 (François Alexandre Pierre des GARSALT, 1691-1778; französ. Polyhistoriker, Autor u.a. von „Description, vertus et usages de 719 plantes“ 1767)

Synonyme: Anemóne hepática LINNAEUS in „Species Plantarum“ 1753 1. Ausg., Vol. I., p. 538 (Carl von LINNÉ, 1707-1778; schwedischer Naturforscher und Botaniker, Begründer der binären Nomenklatur);

Hepática álba MILLER ? (Philip MILLER, 1691-1771, engl. Gärtner und Botaniker);

Hepática nóbilis f. álba MILLER ? (s.o.);

Hepática pléna MILLER ? (s.o.);

Anemóne praécox SALISBURY ? (Richard Anthony SALISBURY, 1761-1829; englischer Botaniker, Gärtner u. Zeichner);

Hepática tríloba CHAIX (1786) nom. illeg. (Dominique CHAIX, 1730-1799; französ. Abt und Botaniker; Mitarbeiter von D. Villars „Histoire des plantes de Dauphin“ Bd. I, 1786) in : Vill. Hist. Pl. Dauph. I : 336, 1786

Anemóne tríloba STOKES ? (Jonathan STOKES, 1755-1831; englischer Arzt u. Botaniker);

Anemóne hepática L. var. mínor ROUY & FOUCAUD (Georges C. Ch. ROUY, 1851-1924; französ. Botaniker / Julien FOUCAUD, 1847-1904, französ. Botaniker);

Hepática tríloba GILIB. (Jean Emmanuel GILIBERT, 1741-1814; französ. Botaniker);

Hepática hepática KARST. (Gustav Karl W. H. KARSTEN, 1817-1908; deutscher Botaniker);

Hepática anemonoídes VEST ? (Lorenz Chrysanth von VEST, 1776-1840; österreichischer Botaniker);

Anemóne tríloba (hort.) nom. nud. ?;

Anemóne hepática L. var. hispánica WILLK. (Heinrich Moritz WILLKOMM, 1821-1895; deutscher Botaniker; Mitautor von H. M. WILLKOMM und J. M. Cr. LANGE „Prodromus florae hispanicae“ 1861-1880 mit Ergänz. 1893)

evtl. ≡ Hepática nóbilis f. pyrenáica nom. nud. ?;

Hepática tríloba var. multiloba C. HARTM. ? (Carl Johan HARTMAN, 1790-1849; schwed. Arzt u. Botaniker);

Hepática tríloba CHAIX var. pícta BECK ? (s.u.);

Hepática nóbilis var. típica BECK ? (Günther BECK von Mannagetta und Lerchenau, 1856-1931, österr.-tschech. Botaniker);

Hepática nóbilis GARSALT (François Alexandre de GARSALT, 1691-1778; französ. Botaniker, s.o.);

Hepática nóbilis GARSALT f. rósea NEUMAN ?, Bot. Nat. 149.1885 (Leopold Martin NEUMAN; 1852-1922; schwed. Botaniker);

Hepática nóbilis f. glabrata FRIES ? (Elias M. FRIES, 1794-1878; schwed. Botaniker);

Hepática nóbilis f. multiloba (CARL HARTMAN) JANCH. ? (Erwin Emil Alfred JANCHEN, 1882-1970; österr. Botaniker);

Hepática tríloba f. subquiquefólia ZAPŁOWICZ ? (Hugo ZAPŁOWICZ, 1852-1917; Auditor, Erforscher der Flora von Galizien);

Topotýpus: Cluj/Rumänien, E. Topa (Fl. Rom. Ex. 2863), 23. März 1947.

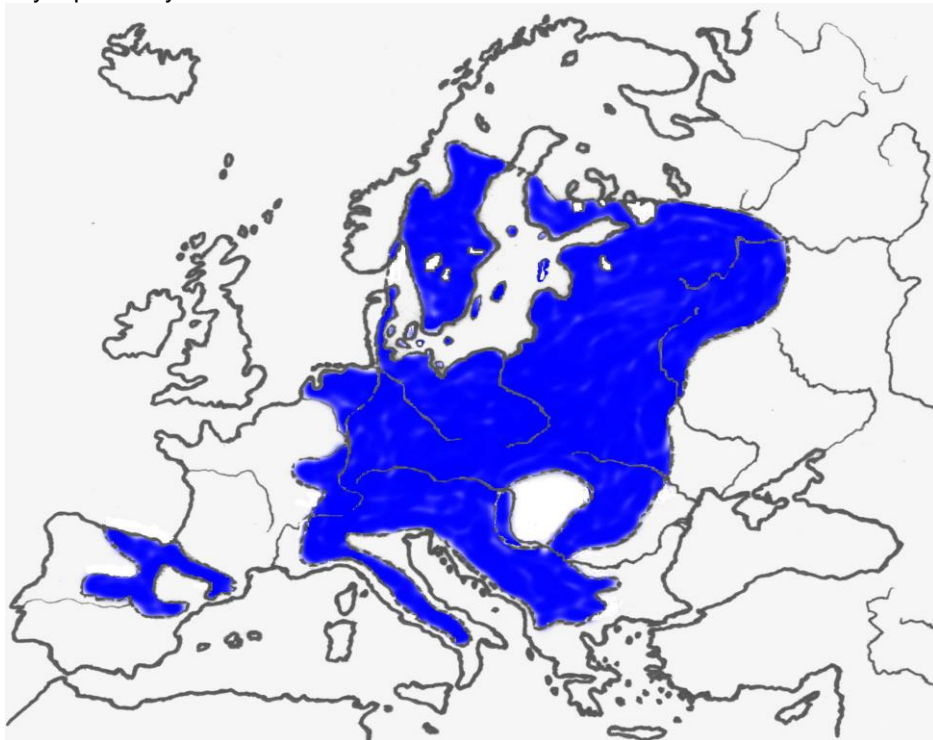
**W.** perennial, herbaceous, often evergreen or at least evergreen perennial, 5-15(-25) cm tall; stem hairy, with 3 entire, green, calyx-like bracts ('involucral' from involúcrum = sheathing calyx) just below the flower.  
- The plant overwinters with a short, of pale, reddish tinged, scale-like bracts, the plant hibernates with a short, vertically standing Shoot axis enclosed by pale, reddish-flaked lower leaves under protection of previous year's foliage (hemicyptophyte: perennial plant whose renewal buds lie just below the soil surface); as soil warms, basal flowers appear after abundant fibrous root development. - Forms after several years, forms additional shoot axes (divídues or "raméts") and thus smaller groups (na natural cloning).  
- In the case of Hepática transsilvánica, this occurs through runners.

**Wz.** Fibrous roots, dark brown, rooting to ½ m deep; rhizome short and thick.

**Bla.** several stem leaves in basal rosette, 3-lobed-heart-shaped, with lobes incised up to the half incised, broadly ovate, obtuse to acuminate lobes, these very rarely again lobed 1) (H. nóbilis f. multiloba [CARL HARTMAN] JANCH. ?, Hepática tríloba f. subquiquefólia ZAPŁOWICZ ?); pedunculate, stems silky-hairy; variable: green to dark green above and sometimes brightly spotted-marbled, reddish-purple beneath; initially curled in the center of the rosette and appearing only after flowering; initially silky-hairy, later leathery-smooth, overwintering and fading the following year during and after flowering. - The seasonal change from the scale-like lower leaves (winter/spring), in the axils of which the flowers are located, to the three-lobed leaves (summer/autumn) was already discovered in 1853 by Alexander BRAUN (German botanist; 1805-1877) in a scheme which combines two annuals - ha bituelle heterophylly, see picture \*).

**Mon.** (02-)03-04(-05)

- Blü.** Perigón; ♂, radiär, basal, single-flowered; they unfold singly - or in older plants like a bouquet - in the midst of the usually still existing leaves of the previous year; 3 green cup-like bracts (see above), up to 10 mm lg., ovate, with entire margins; closely above 5-8(-11) uniform bracts (tepals; sometimes connected to the stamens by transitions 1) ), rarely 1) ), very rarely 12 and more to half or almost filled, narrowly ovate, with entire margins, blue to blue-violet, rarely pink to reddish (H. nóbilis f. rósea NEUM. ?; also: f. rúbra ?) or even more rarely white (H. nóbilis f. álba MIL LER ?), up to 3 cm ; towards evening and in rainy weather nodding and closing in rainy weather (and remaining closed in bad weather); in about 8 days of flowering increasing to almost double the initial length; pedunculate, pedicel long, erect, usually reddish-hairy, during fruit ripening the pedicels bend to the ground, the 3 small bracts protect the ripening fruits. protect the ripening fruits. - In southern Sweden also plants with white-blue speckled petals were found. mottled petals have been found in southern Sweden.
- **Pollenblume**, Nectaries absent.
- Gr.** green to yellowish; pollen three-pored
- N.** white to yellow, heady
- Stbf.** almost white, with white to pink or red connective
- Stbb.** white
- Frkn.** green to yellowish
- Best.** Entomogamy (insects: mainly bees and beetles); pollen flower (flower does not secrete nectar). Autogamy 2)
- Fr.** aggregate fruit, consisting of several (about 6-12 and more) single-seeded fruits, these individual seeds soon falling off.
- S.** elongated-nutlike, greenish, later whitish, hairy, with a short beak, with a light-colored fleshy appendage (elaiosóm), which contains fat and sugar..
- Verbr.** Autochory: self-propagation by offshoots,  
Barochorie: Self-propagation by gravity/own weight of the seed,  
Myrmecoherie: Spread by ants/Stomatochory: spread by the food input of ants,  
hemerochory: spread by human action.



**Occurrence:**

(nach: W. HEMPEL, H. SCHIEMENZ „Unsere geschützten Pflanzen und Tiere“ Urania-Verlag Leipzig/Jena/Berlin, 1. Aufl. 1975)

Deciduous forest zone of the temperate latitudes of Europe, i.e. except higher northern and some western and southern areas (also not native to Britain and Ireland). Colline (<500 m) to montan (500-1200 m), rarely alpine (>1200 m, e.g. Pyrenees).  
- To complete hibernation, the species requires cold exposure; its main western range limit in Europe resembles the January isotherm.

Germany: frequent in Thuringia, Brandenburg and parts of Mecklenburg (up to the Baltic Sea coast), in large parts of Bavaria (especially in the central and southern parts of the country), rarely Saxony, Saxony-Anhalt, Lower Saxony, Baden-Württemberg (also in the Kaiserstuhl region), in North Rhine-Westphalia (only eastern part of the state), rarely in the other states - overall there is a clear decline in a northwesterly direction - Plant species protected in Germany. - Well represented also in Austria and Switzerland. - France: very rare in Ile-de-France and Champagne, somewhat more common in Picardy and in the east like Lorraine, plain of Langres, Alsace, relatively frequent in the Vosges, the Franz. Alps and in the south of the Massif Central/Aubrac, Cevennes; also Corsica. - Pyrenees: e.g. Andorra/around Soldéu. - Spain: about to the center of the Iberian Peninsula. - Italy: Valle d'Aosta, Piemonte, Lombardia, Veneto, Trentino Alto Adige, Friuli Venezia Giulia, Liguria, Emilia Romagna, Tuscany, Umbria, Marche, Lazio, Abruzzo, Molise, Campania, Puglia, Basilicata to Calabria. - Well represented in Eastern Europe, especially in Poland, Czech Republic, Slovakia, in the three Baltic countries, in the northwestern European part of Russia, in Belarus, also in Hungary, Romania and the northern Balkans (Slovenia, Croatia, Serbia, Montenegro, Bosnia; northern Albania/Shqipëria) to Bulgaria. - In northern Europe, well represented in southern and central Sweden and its islands and in southern Finland (up to about 63° north latitude) and in southern Norway up to about 60° north latitude; e.g. in the regions of Østlandet, Sørlandet, Trøndelag, Ryfylke and Hardanger; the isolated occurrence at Bodø on the western Atlantic coast at 67° north latitude, i.e. already slightly north of the Arctic Circle, is probably the most northern location at all). - Preferably in beech and oak mixed forests and scrub with often rich and distinctive spring aspect, likes forest edges, on fresh to moderately dry, nutrient-rich, calcareous and warm gauze soils; likes on limestone, can also serve as a loam and lime indicator (in Brandenburg, for example, also on boulder clay), but also over basic rocks such as basalt or diabase. However, a preference for soils with a higher base content is clear; heaths and pure sandy bogs Heaths and pure sandy soils of the lowlands are avoided, as are very cool and damp mountainous areas. - Under favorable conditions, the plants remain in place for a long time, reaching an age of 30 years or more. and more.

#### Plant Sociology <sup>2)</sup>:

Klasse: Querco-Fagetea (Mesophilous/medium-humid mixed oak and beech forests and scrub; also: nutrient-rich deciduous forests).

Order: Fagetalia, Association: Fagion, Subassociation: Galio odorati-Fagion (woodruff-red beech forests)

Subassociation: Cephalanthero-Fagion (orchid-red beech forests)

Class: Vaccinio-Piceetea (Boreal-continental, dwarf-shrub-rich coniferous forests; also: soil acid coniferous forests and dwarf-shrub-

**Indicator values <sup>2)</sup>:** suboceanic, semi-shade plant, moderately warm indicator, fresh indicator, weak acid to weak base indicator.

Weak-base indicator, on moderately nitrogen-rich sites, not salt-bearing.

Due to the wide distribution in Europe, natural special forms have developed, e.g.

. *H. nobiles* var. *nobiles* f. *álba* MILLER: Petals (tepals) pure white.

. *H. nobiles* var. *nobiles* f. *rosea* NEUM.: Petals (tepals) pinkish to reddish; also: *f. rubra* nom. nud. ?

. *H. nobiles* var. *nobiles* f. *glabrata* FRIES:

K. rather small; bla. small, drab grass-green, smooth, flat, strictly tripartite with smooth margin; flor. white, small;

Occurrence: Sweden: Island of Oeland (and southern Sweden ?) (lat. glabratus = become glabrous).

*H. nobiles* var. *nobiles* f. *pyrenáica* nom. nud. ?:

K. relatively small; bl. small-roundish and moss-green, often with bright, white patterning; bloom. soft-blue, mostly white-annulated occurrences in the Pyrenees.

white, also white or pink; occurrence: Pyrenees evtl. ≡ *Hepática nobiles* var. *hispanica* WILLK. ?:

. *H. nobiles* var. *nobiles* f. *„Eisachtaler“* nom. nud. ?:

K. relatively large; bla. large, hard, with wavy surface, gray-green, often patterned silvery-white or tinged brown-red, peduncle ca. and wiry-hard; flowers generally large and cupped, blue to very intense purple, also violet or white, with equally long pedicels. with also very long flower stems; occurrence: Dolomites

. *H. nobiles* var. *nobiles* f. *marmorata* nom. nud. ?:

Bla. more brightly spotted-marbled; selection from the forms occurring in nature with brightly spotted-marbled leaves (lat. marmoratus = marmoriert)

. *H. nobiles* var. *nobiles* f. *multiloba* (CARL HARTMAN) JACH. ?

evtl. ≡ *Hepática triloba* f. *subquinquefolia* H. ZAPŁOWICZ ?:

Bla. Sheet folded several times

(lat. multilobus = many-lobed, multiple-lobed; lat. sub. = almost, weak and lat. quinquefolius = five-lobed).

. *H. nobiles* var. *nobiles* f. *crenatiloba* nom. nud. ?:

Bla. leaf margins strongly notched and sometimes wavy, leaf surface more marbled

- possibly not a natural selection, but from crossbreeding with *H. transsilvánica* ? - (lat. crenatilobus = notched-lo

There are probably a number of other natural forms, but they are not described - they are all certainly all crossable among each other.

. **Remarks:** hépar (Greek) = liver or hepatikos (Greek) and hepatikus (Latin) = liver-like; genus-

name by MILLER (s.p. 3) after the 3-lobed leaves reminding of the shape of the liver, much slightly violet (reminiscent of the color of the liver) leaf underside; *nobiles* (lat.) = noble, distinguished (because of the - supposed - healing power); liverwort; white-flowered form: snow liverwort <sup>4)</sup>;

**numerous German folk names:** Blue Cowslip, Gulden's liverwort, Hare's-wort, Heartleaf liverwort, Marchflower/Marchflower, Windflower, Foreskinchen (because of the early flowering time), 'father before son' (because the flowers appear before the new leaves), Josephieblüml (because of the flowering time around March

19/Name Day of St. Joseph), Osterbleaml; Low German: Blag'ööschen;  
 English: Common Hepatica, Common Liverleaf, Liverleaf, Kidney Liver Leaf, European Liver Leaf, Golden  
 Trefoil, Herb Trinity, Mayflower, Kidney Wort, Noble Liverleaf; holl.: Leverbloempje; franz.: Anémone  
 hépatique, Hépatique à trios lobes, Fille avant-la-Mère, herbe Trinité, herbe de Saint-Madeleine, herbe du  
 foie; span.: Hepática, trébol dorado, hierba de la Trinidad, hierba del hígado; Catal.: herba fetgera, felera,  
 viola de pastor, viola de llop, viola de galapat, viola borda; Basque: gibel-bedarra; Portuguese: hepática;  
 Italian: hepática, hepática, hepática, hepática, hepática, hepática, hepática, hepática, hepática;  
 Erba trinità; Danish: Blå Anemone; Norwegian: Blåveis; Swedish: Blåsippa; Finnish: blue cock; poln.:  
 przylaszczka, przylaszczka pospolita; est.: Harilik sinilill; lit.: Žibuoklė; lett.: Vizbulīte, zilā; Czech: jaterník.  
 trojlalčný, jaterník podléška; slowak.: Pečeňovník trojlaločný; Sloven.: navadni jetrník; Hungarian: májvirág.  
 (liver= Leber, flower= Blume), noble liverwort, liverwort, Wolf's violet (wolf= Wolf, violet= Viola, Veilchen);  
 russ.: Hepática = печёночница (печёнка= liver), перелёска (перелёсок= small piece of wood, also:  
 lichte Waldstelle), Hepática nóbilis = печёночница благородная (благородный= noble, distinguished),  
 печёночница обыкновенная (common beetle = simple, common), печёночница трёхлопастная  
 (common beetle = simple, common). лопастный= dreilappig); Ukrainian: Печіночниця звичайна.

**Pollination:** Successful pollination depends above all on the presence of sufficient insect pollinators at flowering  
 time insects are available as pollinators at flowering time. Since *H. nóbilis* is nectarless, it can only  
 attract insects by the other flower characteristics such as flower color and size, pollen supply and,  
 above all, early flowering. early flowering, which makes it more attractive and gives it an advantage over  
 the other early flowering early bloomers. If this does not lead to the goal of successful fertilization through  
 allogamy, then the plant still has the way of autogamy. Observations in own collections  
 confirm this; scientific studies on autogamy in *H. nóbilis* (v. *nóbilis*) e.g. on the  
 fertility rate of the seeds are apparently not available. 3) Whether differences in flower size of different  
 plant populations is due not only to light, temperature, and nutrient supply, but also to  
 to this pollination strategy also remains to be investigated..

**Cold resistance / hardening and softening:** Like other herbaceous plants with wintergreen leaves,  
*Hepática nóbilis* survives the winter cold period by increasing cold resistance as a result of  
 Hardening during the fall, when the first cold nights begin. However, while unprotected overwintering  
 buds in deciduous trees increase their cold resistance from -5°C in the fall to -25 to -35°C in January  
 and February, the cold resistance of herbaceous plants does not extend into these ranges because they  
 are not exposed to such low temperatures under the litter and snow cover. are not exposed to such low  
 temperatures. For example, it increases in the wintergreen leaves of *H. nóbilis* only to -15°C, for the  
 better protected flower buds to -10°C, and for the rhizomes only to -7.5°C. Hardening is associated  
 with physico-chemical changes in the protoplasm, which are not yet fully known. changes in the protoplasm  
 and is caused by a sudden increase of the cell sap concentration by a few atmospheres as a result of a  
 temperature increase. The hardening is accompanied by a sudden increase of the cell sap concentration  
 by several atmospheres due to an increase of the sugar concentration, which lowers its freezing point.  
 In the hardened state, the protoplasm is largely inactivated. Probably the process of hardening even  
 begins soon after the middle of the year, when the formation of growth-promoting hormones decreases in  
 favor of growth-inhibiting ones; small applications of fertilizer in July/August at the beginning of food  
 storage in the roots of *H. nóbilis* (i.e. not later) could therefore support hardening off. - This process is  
 then followed in the warm spring by the opposite process of by the opposite process of softening.  
 - If the cold resistance of the above-mentioned plant parts is tested in summer by exposing them to  
 different temperatures below 0°C for about two hours in a refrigerator, irreversible hardening effects are  
 observed. hours in the refrigerator, irreversible damage is caused by the lack of hardening. Such damage  
 can also occur in these plants during early frosts, when hardening off has not yet occurred, or during late  
 frosts. or during late frosts, when hardening off has already occurred. They are not to be confused with  
 damage due to frost desiccation, in which the above-ground parts of the plant, which do, after all, exhibit  
 a certain amount of transpiration, dry out due to water loss from the frozen soil when the plant's conductive  
 the plant's conductive pathways are blocked by ice. 5)

#### Natural cloning:

*Hepática nóbilis* reproduces - in addition to generative propagation by seed formation - in late  
 years by the formation of additional shoot axes ('offshoots'), which are called dividers or 'ramets'.  
 or 'ramets'; this results in smaller groups. The totality of these genetically  
 The totality of these genetically identical daughter individuals is called a clone; this is therefore a natural cloning. At  
*Hepática nóbilis* the clone usually remains dense and compact, while in *Hepática transsilvânica*  
 a more active, spatial distancing of the ramets from the mother plant occurs through the growth of stolons.  
 from the mother plant, which is later followed by a separation (i.e. separation) of the ramets by rotting of the original  
 This is followed by a separation of the ramets by decay of the original connection, so that the dividers can live compl  
 each other.

Chromosomes 3):  $2n = 14$  (diploid species; number of chromosomes in cells);  
 possibly also  $2n = 28$  (tetraploid)?